

What is Claimed is:

1. A medication package comprising:

a. a blister pack having a first layer and a second layer, said first layer having a plurality of bubble chambers formed therein each adapted to receive a dose of medication, said second layer formed of a conductive frangible material, said second layer disposed adjacent said first layer and covering said plurality of bubble chambers such that said dose is removable from a bubble chamber by forcing said dose through said second layer;

b. a circuit board having a first side adjacent said second layer, said first side having conductive dose removal traces, said conductive dose removal traces located adjacent said second layer in alignment with at least one of said plurality of bubble chambers, said conductive dose removal traces being a pair of separate dose removal traces associated with said at least one of said plurality of bubble chambers; and

c. a CPU operably associated with said pair of separate dose removal traces, said CPU monitoring said pair of separate dose removal traces, and said CPU recording a dose removal event responsive to detecting a continuity between said pair of separate dose removal traces, said continuity resulting from said dose being removed through said second layer of said blister pack causing said second layer to contact both of said pair of separate dose removal traces such that said continuity results.

2. The medication package of claim 1 further comprising N rows and M columns of said dose removal traces, said N rows and M columns corresponding to respective ones of said pair of separate dose removal traces, wherein N x M doses are monitored by said CPU using N + M traces.

3. The medication package of claim 2 further comprising:
  - a. overlapping portions of said N rows and M columns at intersections thereof; and
  - b. insulating strips disposed intermediate said N rows and M columns at said overlapping portions.
4. The medication package of claim 1 further comprising a timer associated with said CPU, said timer tracking elapsed time from said dose being removed to identify when a subsequent dose is to be removed, and wherein said timer is initially activated responsive to detection of a first said continuity.
5. The medication package of claim 4 further comprising said CPU programmed with a preset dosing schedule specifying a time interval until said subsequent dose is to be removed.
6. The medication package of claim 1 further comprising a backing layer disposed adjacent said first layer of said blister pack, said backing layer having a plurality of openings located such that said plurality of bubble chambers are disposed through said plurality of openings, said backing layer having a thickness generally equal to a depth of said bubble chambers.
7. The medication package of claim 1 further comprising:
  - a. said circuit board having a second side adjacent said first layer of said blister pack such that said blister pack is disposed between said first and second sides, said second side

having conductive tamper proof traces, said conductive tamper proof traces located adjacent said first layer in alignment with at least one of said plurality of bubble chambers; and

b. said CPU operably associated with said conductive tamper proof traces, said CPU monitoring said conductive tamper proof traces to detect a break in said conductive tamper proof traces, said break being at least one indicator of an attempt to remove said dose in an improper manner.

8. The medication package of claim 7 further comprising said tamper proof traces also provided on said second side of said circuit board.

9. The medication package of claim 8 further comprising:

a. said first and second sides of said circuit board each having a front surface and a back surface, said front surface adjacent said second layer of said blister pack, and

b. said tamper proof traces on each of said first and second sides of said circuit board being disposed on said back surface, and said dose removal traces being disposed on said front surface.

10. The medication package of claim 9 further comprising:

a. said tamper proof traces and said dose removal traces having overlapping portions; and

b. insulating strips separating said overlapping portions.

11. The medication package of claim 7 further comprising said conductive tamper proof traces provided around at least a portion of the periphery of the medication package, such that attempts to remove said dose in an unconventional manner will result in said break which will be detected by said CPU.

12. The medication package of claim 7 further comprising said CPU recording a detection of said break in said tamper proof trace as a tamper attempt if said continuity in said pair of separate dose removal traces is not detected within a predetermined time period subsequent to said break in said tamper proof trace.

13. The medication package of claim 1 further comprising:

- a. a data exchange port operably associated with said CPU for exchanging data between said CPU and an external device; and
- b. said data indicative of at least said continuities.

14. The medication package of claim 7 further comprising:

- a. a data exchange port operably associated with said CPU for exchanging data between said CPU and an external device; and
- b. said data indicative of at least one of said continuities and breaks.

15. The medication package of claim 7 further comprising a backing layer disposed adjacent said first layer of said blister pack, said backing layer having a plurality of openings located such

that said plurality of bubble chambers are disposed through said plurality of openings, said backing layer having a thickness generally equal to a depth of said bubble chambers.

16. The medication package of claim 15 further comprising:

- a. each of said first and second sides of said circuit board having a plurality of openings, or perforated openings, aligned with said plurality of bubble chambers;
- b. a thin circuit board spacer intermediate said first side of said circuit board and said second layer of said blister pack;
- c. a thick circuit board spacer adjacent said first side of said circuit board on a side thereof opposite said thin circuit board spacer, such that said first side of said circuit board is intermediate said thin and thick circuit board spacers; and
- d. each of said thin and thick circuit board spacers having a plurality of openings, or perforated openings, aligned with said plurality of bubble chambers.

17. The medication package of claim 7 further comprising:

- a. a child proof cover enclosing at least a portion of said first and second sides of said circuit board and said first and second layers of said blister pack, said child proof cover having a plurality of openings, or perforated openings, in each of said front and rear faces, said child proof cover movable relative to said circuit board and said blister pack between first and second positions, said first position corresponding to a position at which said plurality of openings, or perforated openings are not aligned with said plurality of doses in said blister pack, said second position corresponding to a position at which said plurality of openings, or perforated openings are aligned with said plurality of doses in said blister pack; and

b. at least one child proof feature restricting movement of said child proof cover between said first and second positions, said at least one child proof feature holding said child proof cover in said first position, said at least one child proof feature operable to permit said child proof cover to move to said second position.

18. The medication package of claim 17 wherein said at least one child proof feature comprises:

- a. a closure spring urging said child proof cover in said first position;
- b. at least one locking portion preventing movement of said child proof cover relative to said circuit board and said blister pack, said at least one locking portion movable to an unlocked position which permits movement of said child proof cover; and
- c. wherein said at least one locking portion must be moved to said unlocked position, said closure spring must be compressed to move said child proof cover to said second position, and said closure spring must be held in said compressed position to maintain said child proof cover in said second position until said dose is removed from said blister pack.

19. The medication package of claim 17 wherein said child proof features further comprise:

- a. an outer packaging material at least partially surrounding said circuit board and said blister pack, said outer packaging material disposed intermediate said circuit board and said child proof cover;
- b. at least one tab provided on at least one of said outer packaging material and said child proof cover; and

c. at least one slot provided in at least one of said outer packaging material and said child proof cover, and said at least one tab slidably received in said at least one slot.

20. The medication package of claim 17 further comprising feet portions provided on said rear surface of said child proof cover, said feet portions adapted to support said child proof cover in a spaced apart relationship from an underlying surface on which said medication package may be placed to negotiate said child proof features and remove said dose.

21. A medication package comprising:

a. a blister pack having a first layer and a second layer, said first layer having a plurality of bubble chambers formed therein each adapted to receive a dose of medication, said second layer formed of a conductive frangible material, said second layer disposed adjacent said first layer and covering said plurality of bubble chambers such that said dose is removable from a bubble chamber by forcing said dose through said second layer;

b. a circuit board having a first side and a second side, each of said first and second sides having conductive traces, said blister pack disposed between said first and second sides with said first side adjacent said first layer and said second side adjacent said second layer, said conductive traces located on each of said first and second sides in alignment with at least one of said plurality of bubble chambers;

c. said conductive traces on said first side of said circuit board being tamper proof traces, and said conductive traces on said second side of said circuit board being dose removal traces, said dose removal traces being a pair of separate dose removal traces associated with said at least one of said plurality of bubble chambers;

d. a CPU operably associated with each of said tamper proof and said pair of separate dose removal traces, said CPU monitoring each of said tamper proof traces and said pair of separate dose removal traces to detect at least one of a break in said tamper proof traces and a continuity in said pair of separate dose removal traces, said CPU recording said breaks and said continuities;

e. said break being an indicator of an attempt to remove said dose in an improper manner; and

f. said continuity resulting from said dose being removed through said second layer of said blister pack causing said second layer to contact both of said separate dose removal traces such that said continuity results.

22. The medication package of claim 21 further comprising N rows and M columns of said dose removal traces, said N rows and M columns corresponding to respective ones of said pair of separate dose removal traces, wherein  $N \times M$  doses are monitored by said CPU using  $N + M$  traces.

23. The medication package of claim 22 further comprising:

a. overlapping portions of said N rows and M columns at intersections thereof; and  
b. insulating strips disposed intermediate said N rows and M columns at said overlapping portions.

24. The medication package of claim 21 further comprising a timer associated with said CPU, said timer tracking elapsed time from said dose being removed to identify when a



subsequent dose is to be removed, and wherein said timer is initially activated responsive to detection of a first said continuity.

25. The medication package of claim 24 further comprising said CPU programmed with a preset dosing schedule specifying a time interval until said subsequent dose is to be removed.

26. The medication package of claim 21 further comprising a backing layer disposed adjacent said first layer of said blister pack, said backing layer having a plurality of openings located such that said plurality of bubble chambers are disposed through said plurality of openings, said backing layer having a thickness generally equal to a depth of said bubble chambers.

27. The medication package of claim 21 further comprising said tamper proof traces also provided on said second side of said circuit board.

28. The medication package of claim 27 further comprising:

a. said first and second sides of said circuit board each having a front surface and a back surface, said front surface adjacent said second layer of said blister pack, and

b. said tamper proof traces on each of said first and second sides of said circuit board being disposed on said back surface, and said dose removal traces being disposed on said front surface.

29. The medication package of claim 28 further comprising:

a. said tamper proof traces and said dose removal traces having overlapping portions; and

b. insulating strips separating said overlapping portions.

30. The medication package of claim 21 further comprising said tamper proof traces provided around at least a portion of the periphery of the medication package such that attempts to remove said dose in an unconventional manner will result in said break in said tamper proof trace which will be detected by said CPU.

31. The medication package of claim 21 further comprising said CPU recording a detection of said break in said tamper proof trace as a tamper attempt if said continuity in said pair of separate dose removal traces is not detected within a predetermined time period subsequent to said break in said tamper proof trace.

32. The medication package of claim 21 further comprising:

a. a data exchange port operably associated with said CPU for exchanging data between said CPU and an external device; and

b. said data indicative of at least one of said breaks and said continuities.

33. The medication package of claim 21 further comprising a backing layer disposed adjacent said first layer of said blister pack intermediate said first layer and said first side of said circuit board, said backing layer having a plurality of openings located such that said plurality of bubble

chambers are disposed through said plurality of openings, said backing layer having a thickness generally equal to a depth of said bubble chambers.

34. The medication package of claim 33 further comprising:

- a. each of said first and second sides of said circuit board having a plurality of openings, or perforated openings, aligned with said plurality of bubble chambers;
- b. a thin circuit board spacer intermediate said second side of said circuit board and said second layer of said blister pack;
- c. a thick circuit board spacer adjacent said second side of said circuit board on a side thereof opposite said thin circuit board spacer, such that said second side of said circuit board is intermediate said thin and thick circuit board spacers; and
- d. each of said thin and thick circuit board spacers having a plurality of openings, or perforated openings, aligned with said plurality of bubble chambers.

35. The medication package of claim 21 further comprising:

- a. a child proof cover enclosing at least a portion of said first and second sides of said circuit board and said first and second layers of said blister pack, said child proof cover having a plurality of openings, or perforated openings, in each of said front and rear faces, said child proof cover movable relative to said circuit board and said blister pack between first and second positions, said first position corresponding to a position at which said plurality of openings, or perforated openings are not aligned with said plurality of doses in said blister pack, said second position corresponding to a position at which said plurality of openings, or perforated openings are aligned with said plurality of doses in said blister pack; and

b. at least one child proof feature restricting movement of said child proof cover between said first and second positions, said at least one child proof feature holding said child proof cover in said first position, said at least one child proof feature operable to permit said child proof cover to move to said second position.

36. The medication package of claim 35 wherein said at least one child proof feature comprises:

- a. a closure spring urging said child proof cover in said first position;
- b. at least one locking portion preventing movement of said child proof cover relative to said circuit board and said blister pack, said at least one locking portion movable to an unlocked position which permits movement of said child proof cover; and
- c. wherein said at least one locking portion must be moved to said unlocked position, said closure spring must be compressed to move said child proof cover to said second position, and said closure spring must be held in said compressed position to maintain said child proof cover in said second position until said dose is removed from said blister pack.

37. The medication package of claim 35 wherein said child proof features further comprise:

- a. an outer packaging material at least partially surrounding said circuit board and said blister pack, said outer packaging material disposed intermediate said circuit board and said child proof cover;
- b. at least one tab provided on at least one of said outer packaging material and said child proof cover; and

c. at least one slot provided in at least one of said outer packaging material and said child proof cover, and said at least one tab slidably received in said at least one slot.

38. The medication package of claim 35 further comprising feet portions provided on said rear surface of said child proof cover, said feet portions adapted to support said child proof cover in a spaced apart relationship from an underlying surface on which said medication package may be placed to negotiate said child proof features and remove said dose.

39. A method of recording at least one of proper and improper removal of a dose of medication from a medication package containing a blister pack, said blister pack having a first layer in which is formed a plurality of bubble chambers, each containing said dose of medication, and a second layer formed of a conductive frangible material covering said bubble chambers, a proper removal of said dose accomplished by pressing said dose through said conductive frangible material, and removal of said dose in any other manner being an improper removal, said medication package recording events indicative of said proper and improper removals of said dose, said method comprising:

a. enclosing at least a portion of said blister pack in a circuit board member having first and second sides, said first side adjacent said first layer of said blister pack and said second side adjacent said second layer thereof;

b. providing perforated openings in said first and second sides, said perforated openings aligned with said plurality of individual doses of medication;

c. disposing a continuous conductive tamper proof trace on at least each of said perforated openings in said first side adjacent said first layer of said blister pack such that a break in said conductive tamper proof trace results in a detectable event;

d. disposing a pair of separate conductive dose removal traces on each of said perforated openings in said second side adjacent said conductive frangible material of said blister pack such that removal of a dose through said frangible material creates a continuity between said pair of separate dose removal traces which is detectable;

e. monitoring and recording events indicating at least one of said proper and improper dose removals;

f. wherein a break in said tamper proof traces is an indicator of said improper dose removal;

g. wherein a continuity between said pair of separate conductive dose removal traces is an indicator of said proper dose removal; and

h. at least conveying data indicative of at least one of said proper and improper dose removal events from said medication package to an external device for analysis.

40. The method of claim 39 further comprising providing N rows and M columns of said dose removal traces, said N rows and M columns corresponding to respective ones of said pair of separate dose removal traces, wherein said monitoring is performed for N x M doses using N + M traces.

41. The method of claim 40 further comprising providing insulating strips intermediate overlapping portions of said N rows and M columns.

42. The method of claim 39 further comprising:
- a. recording elapsed time after each dose removal; and
  - b. providing a preset dosing schedule specifying a time interval until a subsequent dose is to be removed.
43. The method of claim 42 further comprising initially activating said recording of elapsed time responsive to detection of a first said continuity.
44. The method of claim 39 further comprising additionally disposing said tamper proof traces on said second side of said circuit board.
45. The method of claim 44 further comprising additionally disposing said conductive tamper proof traces around at least a portion of a periphery of said medication package, such that attempts to remove said dose other than through said conductive frangible material will result in said break.
46. The method of claim 39 further comprising recording a detection of said break in said tamper proof trace as said indicator of an improper dose removal responsive to a failure to detect said continuity in said pair of separate dose removal traces within a predetermined time period subsequent to said break.
47. The method of claim 39 further comprising:

a. enclosing at least a portion of said first and second sides of said circuit board in a child proof cover, said child proof cover having a plurality of openings, or perforated openings, said child proof cover movable relative to said circuit board between first and second positions, said first position corresponding to a position at which said plurality of openings, or perforated openings, are not aligned with said plurality of doses in said blister pack, said second position corresponding to a position at which said plurality of openings, or perforated openings, are aligned with said plurality of doses in said blister pack; and

b. providing at least one child proof feature restricting movement of said child proof cover between said first and second positions, said at least one child proof feature holding said child proof cover in said first position, said at least one child proof feature operable to permit said child proof cover to move to said second position.

48. The method of claim 47 further comprising:

a. providing a closure spring urging said child proof cover in said first position;

b. providing at least one locking portion preventing movement of said child proof cover relative to said circuit board and said blister pack, said at least one locking portion movable to an unlocked position which permits movement of said child proof cover; and

c. wherein said at least one locking portion must be moved to said unlocked position, said closure spring must be compressed to move said child proof cover to said second position, and said closure spring must be held in said compressed position to maintain said child proof cover in said second position until said dose is removed from said blister pack.

49. The method of claim 47 wherein further comprising:



a. at least partially surrounding said circuit board and said blister pack with an outer packaging material such that said outer packaging material is disposed intermediate said circuit board and said child proof cover;

b. providing at least one tab on at least one of said outer packaging material and said child proof cover; and

c. providing at least one slot in at least one of said outer packaging material and said child proof cover such that said at least one tab is slidably received in said at least one slot.

50. The method of claim 47 further comprising providing feet portions on said child proof cover to support said child proof cover in a spaced apart relationship from an underlying surface on which said medication package may be placed to negotiate said child proof features and remove said dose.